

# CERTIFICATION

SDG No: 1701477C Laboratory: Eurofins, Folsom, CA  
 Site: BMSMC Matrix: Air

**SUMMARY:** Air samples (Table 1) were collected on the BMSMC facility. The BMSMC facility is located in Humacao, PR. Samples were taken January 26 and 29, 2017 and were analyzed in Eurofins Laboratory of Folsom, California that reported the data under SDG No.: 1701477C. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: QC criteria from "Compendium Method TO-15. Determination of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters and Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS), January, 1999"; USEPA Hazardous Waste Support Branch. Validating Air Samples. Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15, (SOP # HW-31. Revision #6. June, 2014). The analyses performed are shown in Table 1. Individual data review worksheets are enclosed for each target analyte group. The data sample summary form shows analytes results that were qualified.

In summary, the results are valid and can be used for decision making purposes.

Table 1. Samples analyzed and analysis performed

SAMPLE ID	SAMPLE DESCRIPTION	MATRIX	ANALYSIS PERFORMED
1701477C-01A	B18SS-2-012617	Air	Methanol
1701477C-02A	B18SS-3-012617	Air	Methanol
1701477C-03A	B18SS-4-012617	Air	Methanol
1701477C-04A	B18SS-5-012617	Air	Methanol
1701477C-05A	B13SS-1-012917	Air	Methanol
1701477C-06A	B13SS-2-012917	Air	Methanol
1701477C-07A	B13SS-2DUP-012917	Air	Methanol
1701477C-08A	B13SS-3-012917	Air	Methanol
1701477C-09A	B15SS-1-012917	Air	Methanol
1701477C-10A	B15SS-1DUP-012917	Air	Methanol
1701477C-11A	B13IA-1-012817	Air	Methanol
1701477C-12A	B13IA-2-012817	Air	Methanol
1701477C-13A	B13IA-2DUP-012817	Air	Methanol
1701477C-14A	B13IA-3-012817	Air	Methanol
1701477C-15A	B18IA-5-012817	Air	Methanol
1701477C-16A	B15IA-1-012817	Air	Methanol
1701477C-17A	B15IA-1DUP-012817	Air	Methanol
1701477C-18A	B1315AA-012817	Air	Methanol

Reviewer Name:

Rafael Infante  
Chemist License 1888

Signature:

*Rafael Infante*

Date:

March 18, 2017





## Air Toxics

Client Sample ID: B18SS-2-012617

Lab ID#: 1701477C-01A

### EPA METHOD TO-15 GC/MS

File Name:	j020212	Date of Collection:	1/26/17 6:38:00 PM
Dil. Factor:	2.38	Date of Analysis:	2/2/17 06:03 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methanol	120	Not Detected	160	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	99	70-130





## Air Toxics

Client Sample ID: B185SS-3-012617

Lab ID#: 1701477C-02A

### EPA METHOD TO-15 GC/MS

File Name:	J020213	Date of Collection:	1/26/17 6:18:00 PM
Dil. Factor:	2.42	Date of Analysis:	2/2/17 06:26 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methanol	120	360	160	470

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	100	70-130





## Air Toxics

Client Sample ID: B18SS-4-012617

Lab ID#: 1701477C-03A

EPA METHOD TO-15 GC/MS

File Name:	j020214	Date of Collection: 1/26/17 5:07:00 PM
Dil. Factor:	2.82	Date of Analysis: 2/2/17 06:50 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methanol	140	160	180	220

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	105	70-130





## Air Toxics

Client Sample ID: B18SS-5-012617

Lab ID#: 1701477C-04A

EPA METHOD TO-15 GC/MS

File Name:	j020215	Date of Collection: 1/26/17 5:58:00 PM
Dil. Factor:	2.52	Date of Analysis: 2/2/17 07:13 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methanol	130	140	160	190

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	104	70-130





## Air Toxics

Client Sample ID: B13SS-1-012917

Lab ID#: 1701477C-05A

EPA METHOD TO-15 GC/MS

File Name:	j020216	Date of Collection:	1/29/17 3:11:00 PM
Dil. Factor:	2.47	Date of Analysis:	2/2/17 07:36 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methanol	120	190	160	250

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	104	70-130





## Air Toxics

Client Sample ID: B13SS-2-012917

Lab ID#: 1701477C-06A

### EPA METHOD TO-15 GC/MS

File Name:	j020217	Date of Collection:	1/29/17 3:55:00 PM
Dil. Factor:	2.58	Date of Analysis:	2/2/17 07:59 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methanol	130	270	170	350

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	102	70-130







## Air Toxics

Client Sample ID: B13SS-2DUP-012917

Lab ID#: 1701477C-07A

### EPA METHOD TO-15 GC/MS

File Name:	J020218	Date of Collection:	1/29/17 3:55:00 PM
Dil. Factor:	2.46	Date of Analysis:	2/2/17 08:23 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methanol	120	300	160	390

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	105	70-130





## Air Toxics

Client Sample ID: B13SS-3-012917

Lab ID#: 1701477C-08A

EPA METHOD TO-15 GC/MS

File Name:	j020219	Date of Collection:	1/29/17 3:36:00 PM
Dil. Factor:	2.58	Date of Analysis:	2/2/17 08:46 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methanol	130	550	170	720

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	101	70-130





## Air Toxics

Client Sample ID: B15SS-1-012917

Lab ID#: 1701477C-09A

### EPA METHOD TO-15 GC/MS

File Name:	j020220	Date of Collection: 1/29/17 5:55:00 PM
Dil. Factor:	2.38	Date of Analysis: 2/2/17 09:10 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methanol	120	230	160	310

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	102	70-130





## Air Toxics

Client Sample ID: B15SS-1DUP-012917

Lab ID#: 1701477C-10A

### EPA METHOD TO-15 GC/MS

File Name:	j020221	Date of Collection:	1/29/17 5:55:00 PM
Dil. Factor:	2.47	Date of Analysis:	2/2/17 09:33 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methanol	120	170	160	220

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	103	70-130





## Air Toxics

Client Sample ID: B131A-1-012817

Lab ID#: 1701477C-11A

EPA METHOD TO-15 GC/MS

File Name:	j020204	Date of Collection:	1/29/17 2:45:00 PM
Dil. Factor:	1.64	Date of Analysis:	2/2/17 12:01 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methanol	82	Not Detected	110	Not Detected

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	101	70-130





## Air Toxics

Client Sample ID: B131A-2-012817

Lab ID#: 1701477C-12A

EPA METHOD TO-15 GC/MS

File Name:	J020205	Date of Collection:	1/29/17 3:08:00 PM
Dil. Factor:	1.61	Date of Analysis:	2/2/17 12:24 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methanol	80	Not Detected	100	Not Detected

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	100	70-130





## Air Toxics

Client Sample ID: B131A-2DUP-012817

Lab ID#: 1701477C-13A

EPA METHOD TO-15 GC/MS

File Name:	J020206	Date of Collection: 1/29/17 3:10:00 PM
Dil. Factor:	1.55	Date of Analysis: 2/2/17 12:47 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methanol	78	Not Detected	100	Not Detected

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	103	70-130





## Air Toxics

Client Sample ID: B13IA-3-012817

Lab ID#: 1701477C-14A

EPA METHOD TO-15 GC/MS

File Name:	J020207	Date of Collection:	1/29/17 2:52:00 PM
Dil. Factor:	1.64	Date of Analysis:	2/2/17 01:10 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methanol	82	Not Detected	110	Not Detected

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	103	70-130







## Air Toxics

Client Sample ID: B18IA-5-012817

Lab ID#: 1701477C-15A

EPA METHOD TO-15 GC/MS

File Name:	j020208	Date of Collection: 1/29/17 4:25:00 PM
Dil. Factor:	1.64	Date of Analysis: 2/2/17 01:34 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methanol	82	82	110	110

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	103	70-130





## Air Toxics

Client Sample ID: B15IA-1-012817

Lab ID#: 1701477C-16A

EPA METHOD TO-15 GC/MS

File Name:	j020209	Date of Collection: 1/29/17 3:44:00 PM
Dil. Factor:	1.61	Date of Analysis: 2/2/17 01:57 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methanol	80	Not Detected	100	Not Detected

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	102	70-130



## Air Toxics

Client Sample ID: B151A-1DUP-012817

Lab ID#: 1701477C-17A

### EPA METHOD TO-15 GC/MS

File Name:	j020210	Date of Collection:	1/29/17 3:44:00 PM
Dil. Factor:	1.55	Date of Analysis:	2/2/17 02:20 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methanol	78	Not Detected	100	Not Detected

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	101	70-130





## Air Toxics

Client Sample ID: B1315AA-012817

Lab ID#: 1701477C-18A

EPA METHOD TO-15 GC/MS

File Name:	J020211	Date of Collection: 1/29/17 4:12:00 PM
Dil. Factor:	1.71	Date of Analysis: 2/2/17 02:43 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methanol	86	Not Detected	110	Not Detected

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	100	70-130





Air Toxics

Sample Transportation Notice

Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples, D.O.T. Hotline (800) 467-4922

180 BLUE RAVINE ROAD, SUITE B  
FOLSOM, CA 95630-4719  
(916) 985-1000 FAX (916) 985-1020

Page 1 of 1

Project Manager Terry Taylor

Collected by: (Print and Sign) David Lindstead

Company AAA Email \_\_\_\_\_

Address 2709 Winchester City Purchase State NY Zip 10577

Phone 914-257-0406 X 309 Fax \_\_\_\_\_

Project Info:

P.O. # \_\_\_\_\_

Project # AMS VI Invest

Project Name Buildings 8,13,15,18 and 30

Turn Around Time: ☒ Normal ☐ Rush

Lab Use Only Pressurized by: V.V. Date: 2/2/17

Pressurization Gas: (N<sub>2</sub>) He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum
						Initial Final Receipt Final (psi)
01A	B1855-2-012617	111743	1/26/17	1838	TO-15, MeOH, CH <sub>4</sub>	30 5 4.5" Hg 15psi
02A	B1855-3-012617	00763	1/26/17	1818	TO-15, MeOH, CH <sub>4</sub>	30 5 5.0" Hg 15psi
03A	B1855-4-012617	00882	1/26/17	1907	TO-15, MeOH, CH <sub>4</sub>	30 9 8.5" Hg 15psi
04A	B1855-5-012617	00816	1/26/17	1758	TO-15, MeOH, CH <sub>4</sub>	30 5 6.0" Hg 15psi
05A	B1355-1-012917	12055	1/29/17	1511	TO-15, MeOH, CH <sub>4</sub>	30 5 6.5" Hg 15psi
06A	B1355-2-012917	1063	1/29/17	1505	TO-15, MeOH, CH <sub>4</sub>	30 5 6.5" Hg 15psi
07A	B1355-3-012917	1044	1/29/17	1501	TO-15, MeOH, CH <sub>4</sub>	30 5 6.5" Hg 15psi
08A	B1355-4-012917	33637	1/29/17	1501	TO-15, MeOH, CH <sub>4</sub>	30 5 6.5" Hg 15psi
09A	B1555-1-012917	33637	1/29/17	1755	TO-15, MeOH, CH <sub>4</sub>	30 5 4.5" Hg 15psi
10A	B1555-1DUP-012917	11955	1/29/17	1755	TO-15, MeOH, CH <sub>4</sub>	30 5 4.5" Hg 15psi
Relinquished by: (signature) <u>David Lindstead</u> Date/Time <u>Jan 30, 2017</u>		Received by: (signature) <u>Fed EX</u> Date/Time <u>1/30/17</u>	Notes: <u>Canister 0691 will not be analyzed. (815 551-9/2917) Received without an initial vacuum</u>			
Relinquished by: (signature) _____ Date/Time _____		Received by: (signature) <u>Andrew W. W. W.</u> Date/Time <u>1/30/17</u>				
Relinquished by: (signature) _____ Date/Time _____		Received by: (signature) _____ Date/Time _____				
Lab Use Only	Shipper Name <u>Fed Ex</u>	Air Bill # _____	Temp (°C) <u>NA</u>	Condition <u>Good</u>	Custody Seals Intact? <u>Yes</u> <u>No</u> <u>None</u>	Work Order # <u>1701477</u>



## Page 2 of 2

*Alfred*

Press. Gas:  
N2 He

Notes: Do not analyze Can NG627, 0443,  
and 0908. Cans ~~are~~ not used.  
for sampling. Do not analyze 36459.  
Also not used

Received By: (Signature) Date/Time

**Work Order #**

No

## EXECUTIVE NARRATIVE

SDG No: **1701477C**

Analysis: **TO-15**

Location:

Laboratory: **Eurofins, Folsom, CA**

Number of Samples: **18**

**SUMMARY:** Eighteen (18) samples were analyzed for methanol in ambient air following Compendium Method TO-15. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: QC criteria from "Compendium Method TO-15. Determination of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters and Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS), January, 1999"; USEPA Hazardous Waste Support Branch. Validating Air Samples. Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15, (SOP # HW-31. Revision #6. June, 2014). The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

Results are valid and can be used for decision making purposes.

**Critical issues:** **None**

**Major:** **None**

**Minor:** **None**

**Critical findings:** **None**

**Major findings:** **None**

**Minor findings:** **1.** Field duplicates analyzed with this data package. RPD within laboratory and generally acceptable control limits except for the cases described in the Data Review Worksheet. No action taken, RPD within the method performance criteria and the sample and duplicate concentration < 5 x SQL.

**COMMENTS:** Results are valid and can be used for decision making purposes.

**Reviewers Name:** Rafael Infante  
Chemist License 1888



**Signature:**

**Date:** March 16, 2017

METHANOL DATA SAMPLE SUMMARY

METHOD:

TO-15

METHANOL - TO-15							
Sample ID	Date	Results	Units	Dilution Factor	Lab Flag	Validation	Reportable
1701477C-01A	1/26/2017	160	ug/m <sup>3</sup>	2.38	-	U	Yes
1701477C-02A	1/26/2017	470	ug/m <sup>3</sup>	2.42	-	-	Yes
1701477C-03A	1/26/2017	220	ug/m <sup>3</sup>	2.82	-	-	Yes
1701477C-04A	1/26/2017	190	ug/m <sup>3</sup>	2.52	-	-	Yes
1701477C-05A	1/29/2017	250	ug/m <sup>3</sup>	2.47	-	-	Yes
1701477C-06A	1/29/2017	350	ug/m <sup>3</sup>	2.58	-	-	Yes
1701477C-07A	1/29/2017	390	ug/m <sup>3</sup>	2.46	-	-	Yes
1701477C-08A	1/29/2017	720	ug/m <sup>3</sup>	2.58	-	-	Yes
1701477C-09A	1/29/2017	310	ug/m <sup>3</sup>	2.38	-	-	Yes
1701477C-10A	1/29/2017	220	ug/m <sup>3</sup>	2.47	-	-	Yes
1701477C-11A	1/29/2017	110	ug/m <sup>3</sup>	1.64	-	U	Yes
1701477C-12A	1/29/2017	100	ug/m <sup>3</sup>	1.61	-	U	Yes
1701477C-13A	1/29/2017	100	ug/m <sup>3</sup>	1.55	-	U	Yes
1701477C-14A	1/29/2017	110	ug/m <sup>3</sup>	1.64	-	U	Yes
1701477C-15A	1/29/2017	110	ug/m <sup>3</sup>	1.64	-	-	Yes
1701477C-16A	1/29/2017	100	ug/m <sup>3</sup>	1.61	-	U	Yes
1701477C-17A	1/29/2017	100	ug/m <sup>3</sup>	1.55	-	U	Yes
1701477C-18A	1/29/2017	110	ug/m <sup>3</sup>	1.71	-	U	Yes



Project Number: 1701477CDate: 01/26 & 29/17

## REVIEW OF VOLATILE ORGANIC PACKAGE

The following guidelines for evaluating volatile organics were created to delineate required validation actions. This document will assist the reviewer in using professional judgment to make more informed decision and in better serving the needs of the data users. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: QC criteria from "Compendium Method TO-15. Determination of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters and Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS), January, 1999"; USEPA Hazardous Waste Support Branch. Validating Air Samples. Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15, (SOP # HW-31. Revision #6. June, 2014). The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

The hardcopied (laboratory name) Eurofins data package received has been reviewed and the quality control and performance data summarized. The data review for VOCs included:

Lab. Project/SDG No.: 1701477CSample matrix: AirNo. of Samples: 18Trip blank No.: -Field blank No.: -Equipment blank No.: -Field duplicate No.: 1701477C-06A/1701477C-07A; 1701477C-09A/1701477C-10A1701477C-12A/1701477C-13A; 1701477C-16A/1701477C-17A☒ Data Completeness☒ Laboratory Control Spikes☒ Sampling Integrity/Preservation☒ Field Duplicates☒ GC/MS Tuning☒ Calibrations☒ Internal Standard Performance☒ Compound Identifications☒ Blanks☒ Compound Quantitation☒ Surrogate Recoveries☒ Quantitation LimitsOverall Comments: VOCs (methanol) by method TO-15

## Definition of Qualifiers:

J- Estimated results

U- Compound not detected

R- Rejected data

UJ- Estimated nondetect

Reviewer: Rafael InfanteDate: 03/16/17

## DATA COMPLETENESS

### MISSING INFORMATION

DATE LAB. CONTACTEDDATE RECEIVED

All criteria were met   X    
 Criteria were not met  
 and/or see below       

### SAMPLE INTEGRITY AND PRESERVATION

Canister used for sampling of the ambient air must be demonstrated clean, and leak free prior to sample collection. Cleanliness is demonstrated by the analysis of an individual canister or analysis of a representative canister, if only batch cleaning was required. Leak proof testing is performed on individual canisters. Canisters are used in conjunction with gauges, valves and flow controllers. Therefore, canister should be demonstrated clean and leak free inclusive of these components as appropriate.

- a. Leak proof test:
- Was the pressure of each canister measured before shipping? Yes or No
- Was the pressure of each canister measured before sampling? Yes or No
- Did the canister hold vacuum/pressure within +/- 2 psi from the date shipped to the sampling date? Yes or No

Note:

- The laboratory should be notified if the difference between the laboratory and field pressure is greater than 2 psi.

Actions:

Actions for use of canisters with failing leak test criteria are indicated in Table 1 below.

**Table 1. Canister Leak test Actions for TO-15 Analysis\***

Matrix	Difference in initial and 24 hour pressure (psi) Criteria	Action	
		Detected Associated Compounds	Non-Detected Associated Compounds
Air	$\leq 5$	No qualification	
Air	$> 5$	J	UJ or R

\*Excessive time period (> 3months) elapsed between leak test and actual use should be considered in evaluation of canister integrity.

- b. Cleanliness
- Integrity of the canister used for sampling of air for analysis should be maintained at all times including time of shipment to the field, sampling, shipping back to the laboratory and time of analysis. Analytical results of canister cleaning verification must be taken into account in the validation of sample results.

Does the canister meet the cleanliness criteria? Yes or No

Is the canister verification included in the data package?

Yes or **No**

Actions:

Canister contamination actions are stated in Table 2 below.

**Note:** Laboratory stated that the SUMMA canisters employed were 100 % certified.

**Table 2. Canister Contamination Actions for TO-15 Analyses**

Contamination Type/level	Canister Cleaning Result	Sample Result	Action for Samples
Clean Canister analysis	Detects	Analytes found in clean canister analysis are non-detects	No qualification required
	<CRQL	< CRQL	Report CRQL value with a U
		$\geq$ CRQL and < 2x the CRQL	Report concentration of sample with a U
		$\geq$ 2x the CRQL	No qualification required
	> CRQL	< CRQL	Report CRQL value with a U
		$\geq$ CRQL and $\leq$ clean canister value	Report clean canister value with a U
		$\geq$ CRQL and > clean canister value	No qualification required
	= CRQL	$\leq$ CRQL	Report CRQL value with a U
		> CRQL	No qualification required

c. Holding time and sample integrity

SUMMA canisters are to minimize sample charges or loss for majority of the analyte. Sample integrity is maintained by ensuring the system is closed tight and canister pressure from the time of sampling to the time of analysis is maintained within a difference allowable due to temperature change.

Was the canister pressure measured at the conclusion of the sampling period?

**Yes** or No

Was the canister pressure measured upon arrival to the laboratory? **Yes** or No

Was the canister pressure difference between sampling and analysis less than 5 psi?

**Yes** or No

Actions:

Qualify sample results using technical holding time information as stated in Table 3.

Pressure difference between sampling and analysis should be less than 5 psi. Qualify samples as per Table 3 requirements.

**Table 3. Holding Time Actions for TO-15 Volatile Analyses**

Matrix	Preserved (Pressure difference between sampling and analysis $\leq 5$ psi)	Criteria	Action	
			Detected Associated Compounds	Non-Detected Associated Compounds
Air	Yes	< 30 days	No qualification	
	Yes	>30 days	J	UJ
Air	No	< 30 days	J	UJ
	No	>30 days	J	R

Complete table for all samples and note the integrity and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE ANALYZED	Pressure difference < 5 psi	ACTION
All samples analyzed within the recommended method holding time. All summa canisters received in good conditions. Pressure difference < 5 psi between sampling and analysis.				

The following pressure conversion is used, if necessary

PRESSURE CONVERSION TABLE								
PSI	ATM	kgf/cm <sup>2</sup>	in.H <sub>2</sub> O	mmHg	in.Hg	Kpa	Bar	mm H <sub>2</sub> O
1	0.068046	0.070307	27.7276	51.715	2.03602	6.895	0.6895	704.28104
14.696	1	1.0332	407.484	760	29.921	101.325	1.01325	10350.0936
14.2233	0.96784	1	394.38	735.559	28.959	98.096	0.98067	10000
0.036092	0.002454	0.00253	1	1.8651	0.07343	0.249	0.00249	25.4
0.019336	0.001315	0.001359	0.53616	1	0.03937	0.1333	0.001333	13.618464
0.491154	0.0033421	0.03453	13.6185	25.4	1	3.3864	0.033864	345.9099
0.145	0.00987	0.010197	4.0186	7.5006	0.2953	1	0.01	102.07244
14.5038	0.98692	1.01972	402.156	750.062	29.53	100	1	10214.7624

All criteria were met   X    
 Criteria were not met see below       

## GC/MS TUNING

The assessment of the tuning results is to determine if the sample instrumentation is within the standard tuning QC limits

### **Gas Chromatograph/Mass Spectrometer (GC/MS) Instrument Performance Check**

#### **Action:**

**NOTES:** This requirement does not apply when samples are analyzed by the Selected Ion Monitoring (SIM) technique.

All mass spectrometer instrument conditions must be identical to those used during the sample analysis. Background subtraction actions resulting in spectral distortions for the sole purpose of meeting the method specifications are contrary to the Quality Assurance (QA) objectives, and are therefore unacceptable.

**NOTES:** No data should be qualified based on BFB or DFTTP failure. Instances of this should be noted in the narrative.

All ion abundance ratios must be normalized to m/z 95, the nominal base peak, even though the ion abundance of m/z 174 may be up to 120% that of m/z 95.

1. If samples are analyzed without a preceding valid instrument performance check, qualify all data in those samples as unusable (R).
2. If the laboratory has made minor transcription errors which do not significantly affect the data, the data reviewer should make the necessary corrections on a copy of the form.
3. If the laboratory has failed to provide the correct forms or has made significant transcription or calculation errors, the Region's designated representative should contact the laboratory and request corrected data. If the information is not available, the reviewer must use professional judgment to assess the data and notify the Project Officer (PO).
4. If ion abundance criteria are not met, professional judgment may be applied to determine to what extent the data may be utilized. When applying professional judgment to this topic, the most important factors to consider are the empirical results that are relatively insensitive to location on the chromatographic profile and the type of instrumentation. Therefore, the critical ion abundance criteria for BFB are the m/z 95/96, 174/175, 174/176, and 176/177 ratios. The relative abundances of m/z 50 and 75 are of lower importance. This issue is more critical for Tentatively Identified Compounds (TICs) than for target analytes.
5. Note, in the Data Review Narrative, decisions to use analytical data associated with BFB instrument performance check failures (not meeting contract requirements).
6. If the reviewer has reason to believe that instrument performance check criteria were achieved using techniques other than those described in the Compendium method TO-15 entitled "Determination Of Volatile Organic Compounds(VOCs) In Air Collected In Specially-Prepared Canisters And Analyzed By Gas Chromatography/Mass Spectrometry(GC/MS)", section 10.4, obtain additional information on the instrument performance checks. If the techniques employed are found to be at variance with the contract requirements, the performance and procedures of the laboratory may merit evaluation.
7. Use professional judgment to determine whether associated data should be qualified based on the spectrum of the mass calibration compound.

☒ The BFB performance results were reviewed and found to be within the specified criteria.

☒ BFB tuning was performed for every 24 hours of sample analysis.

If no, use professional judgment to determine whether the associated data should be accepted, qualified or rejected.

List the samples affected:

---

If mass calibration is in error, all associated data are rejected.

All criteria were met   X    
 Criteria were not met  
 and/or see below           

## CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration:           02/02/2017            
 Date of initial calibration verification:           -            
 Dates of continuing calibration:           02/02/2017            
 Instrument ID numbers:           MSD-J            
 Matrix/Level:           Air/low          

DATE	LAB FILE ID#	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED
Initial and continuing calibrations meet method specific requirements. Initial calibration retention times meet method specific requirements. One point calibration curve performed.				

### Note:

The following criteria apply:

**Table 5. Initial Calibration Actions for TO-15 Analyses**

Criteria for TO-15 Analysis	Action	
	Detected Associated Compounds	Non-Detected Associated Compounds
RRF < 0.010 (poor response volatile target compounds, Table 4) RRF < 0.050 (all other volatile target compounds)	J (based on mass spectral identification)	R
RRF > 0.010 (poor response volatile target compounds, Table 4) RRF > 0.050 (all other volatile target compounds)	No qualification	
% RSD > 40.0 or < -40.0 (poor response volatile target compounds, Table 4) % RSD > 30.0 or < -30.0 (all other Volatile target compounds)	No qualification	
% RSD < 40.0 and > -40.0 (poor response volatile target compounds, Table 4) % RSD < 30.0 and > -30.0 (all other volatile target compounds)	J	Use professional judgment



**Table 6. Continuing Calibration Verification (CCV) Actions for TO-15 Analyses**

Criteria for CCV	Action	
	Detected Associated Compounds	Non-Detected Associated Compounds
RRF < 0.010 (poor response volatile target compounds, Table 4) RRF < 0.050 (all other volatile target compounds)	J (based on mass spectral identification)	R
RRF > 0.010 (poor response volatile target compounds, Table 4) RRF > 0.050 (all other volatile target compounds)	No qualification	
%D > 40.0 or < -40.0 (poor response volatile target compounds, Table 4) %D > 30.0 or < -30.0 (all other Volatile target compounds)	J	UJ
%D < 40.0 and > -40.0 (poor response volatile target compounds, Table 4) %D < 30.0 and > -30.0 (all other volatile target compounds)	No qualification	

If the % D for daily calibration exceeds -90, use professional judgment to see if non-detects need to be qualified as unusable "R"

**Note:** Methanol is not a poor response compound; the regular calibration/calibration verification criteria are employed.

A separate worksheet should be filled for each initial curve

Table 4. TO 15 Volatile Compounds List\*

Compound	CAS Number	Synonyms
Acetone	67-64-1	Dimethyl ketone; Dimethylformaldehyde; 2-Propanone
Allyl chloride	107-05-1	3-Chloropropene; 3-Chloroprene
Benzene	71-43-2	Benzol; Benzine
Benzyl chloride	100-44-7	Chloromethylbenzene; alpha-Chlorotoluene
Bromodichloromethane	75-27-4	Monobromodichloromethane; Methane-bromodichloro
Bromoethene	593-60-2	Vinyl bromide; Monobromoethene
Bromoform	75-25-2	Tribromoethane
Bromomethane	74-83-9	Methyl bromide; Monobromomethane
1,3-Butadiene	106-99-0	Biethylene; Erythrene; Pyrrolyene
<b>Carbon disulfide</b>	<b>75-15-0</b>	<b>Carbon bisulfide; Carbon sulfide</b>
Carbon tetrachloride	56-23-5	Carbon tet; Tetrachloromethane
Chlorobenzene	108-90-7	Monochlorobenzene; Chlorobenzol; Benzene chloride
<b>Chloroethane</b>	<b>75-00-3</b>	<b>Ethyl chloride; Chlorene; Chloryl</b>
Chloroethene	75-01-4	Vinyl chloride; Ethylene monochloride
Chloroform	67-66-3	Trichloromethane; Methyltrichloride; Methane trichloride
<b>Chloromethane</b>	<b>74-87-3</b>	<b>R40; Methyl chloride; Monochloromethane</b>
Cyclohexane	110-82-7	Hexamethylene; Hexahydrobenzene; Hexanaphthene
Dibromochloromethane	124-48-1	Chlorodibromomethane
<b>1,2-Dibromoethane</b>	<b>106-93-4</b>	<b>EDB; Ethylene dibromide</b>
1,2-Dichlorobenzene	95-50-1	ODB; Chloroben
1,3-Dichlorobenzene	541-73-1	meta-Dichlorobenzene; m-Phenylenedichloride
1,4-Dichlorobenzene	106-46-7	para-Dichlorobenzene; Parazene; Santochlor
1,1-Dichloroethane	75-34-3	Ethylidene chloride; Ethylidene dichloride
1,2-Dichloroethane	107-06-2	Ethylene dichloride; Glycol dichloride; 1,2-DCA
1,1-Dichloroethene	75-35-4	1,1-DCE; Vinylidene chloride
cis-1,2-Dichloroethylene	156-59-2	cis-1,2-DCE; cis-Acetylene dichloride
trans-1,2-Dichloroethylene	156-60-5	trans-1,2-DCE; trans-Acetylene dichloride
<b>1,2-Dichloropropane</b>	<b>78-87-5</b>	<b>Propylene dichloride; Propylene chloride</b>
cis-1,3-Dichloropropene	10061-01-5	1-Propene, 1,3-dichloro-, (z)-; cis-1,3-Dichloro-1-Propene
trans-1,3-Dichloropropene	10061-02-6	trans-1,3-Dichloro-1-Propene; trans-1,3-Dichloropropylene
<b>1,4-Dioxane</b>	<b>123-91-1</b>	<b>Diethylene dioxide; Diethylene ether</b>
Ethyl acetate	141-78-6	Acetic acid ethyl ester; Acetic ether
Ethylbenzene	100-41-4	Ethylbenzol; Phenylethane
4-Ethyltoluene	622-96-8	1-Ethyl-4-methyl benzene; p-Methylethylbenzene
Freon 11 (CCl <sub>3</sub> F)	75-69-4	Trichlorofluoromethane; Fluorotrichloromethane; Fluorocarbon 11

Freon 12 (CCl <sub>2</sub> F <sub>2</sub> )	75-71-8	Dichlorodifluoromethane; Fluorocarbon 12
Freon 113 (C <sub>2</sub> Cl <sub>3</sub> F <sub>3</sub> )	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane; Fluorocarbon 113; 1,1,2-Trichlorotrifluoroethane
Freon 114 (C <sub>2</sub> Cl <sub>2</sub> F <sub>4</sub> )	76-14-2	1,2-Dichlorotetrafluoroethane; Halocarbon 114; 1,2-Dichloro-1,1,2,2-tetrafluoroethane
Heptane	142-82-5	Dipropylmethane; Heptyl hydride
Hexachlorobutadiene	87-68-3	1,3-Hexachlorobutadiene; Perchlorobutadiene
Hexane	110-54-3	n-Hexane; Hexyl hydride
2-Hexanone	591-78-6	Methyl butyl ketone; Butyl methyl ketone; Hexan-2-one
Isopropyl alcohol	67-63-0	2-Propanol; Isopropanol
<b>Methylene chloride</b>	<b>75-09-2</b>	<b>Dichloromethane; Methylene dichloride</b>
<b>Methyl ethyl ketone</b>	<b>78-93-3</b>	<b>MEK; 2-Butanone; Ethyl methyl ketone</b>
Methyl isobutyl ketone	108-10-1	MIBK; 2-Pentanone; Hexone; Isopropylacetone
Methyl tert-butyl ether	1634-04-4	MTBE; 2-Methoxy-2-methylpropane; tert-Butyl methyl ether
Propylene	115-07-1	Propene; Methylene
Styrene	100-42-5	Vinylbenzene; Phenylethylene
1,1,2,2-Tetrachloroethane	79-34-5	Tetrachloroethane; Acetylene tetrachloride; Bonoform
Tetrachloroethene	127-18-4	PCE; PERC; Perchloroethylene; Ethylene tetrachloride; Carbon bichloride; Carbon dichloride
Tetrahydrofuran	109-99-9	Diethylene oxide; Butylene oxide
Toluene	108-88-3	Toluol; Methylbenzene
1,2,4-Trichlorobenzene	120-82-1	1,2,4-Trichlorobenzol
1,1,1-Trichloroethane	71-55-6	Methyl chloroform; Trichloroethane
1,1,2-Trichloroethane	79-00-5	beta-Trichloroethane; Ethane trichloride; Vinyl trichloride
Trichloroethene	79-01-6	TCE; Acetylene trichloride; Ethinyl trichloride
1,2,4-Trimethylbenzene	95-63-6	Pseudocumene; Pseudocumol
1,3,5-Trimethylbenzene	108-67-8	Mesitylene; Trimethylbenzol
2,2,4-Trimethylpentane	540-84-1	Iso-octane; Isobutyltrimethylmethane
Vinyl acetate	108-05-4	Acetic acid ethenyl ether; Ethenyl acetate
p-Xylene	106-42-3	p-Methyltoluene; 1,4-dimethylbenzene
m-Xylene	108-38-3	m-Methyltoluene; 1,3-dimethylbenzene
o-Xylene	95-47-6	o-Methyltoluene; 1,2-Dimethylbenzene

\*Laboratories use different sets and subsets of analytes on as needed basis.

#### NOTES:

Compounds in bold italicized letters may have poor GCMS response. These poor response compounds are evaluated using more relaxed relative response factor criteria as stated below.

All criteria were met \_\_\_\_\_  
 Criteria were not met \_\_\_\_\_  
 and/or see below \_\_\_\_\_X\_\_\_\_\_

## V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Blanks criteria and appropriate actions

**Table 7. Blank Actions for TO-15 Analyses**

Blank Type	Blank Result	Sample Result	Action for Samples
Method, Storage, Field, Trip, Instrument***	Detects	Not detected	No qualification required
	< CRQL *	< CRQL*	Report CRQL value with a U
		≥ CRQL* and < 2x the CRQL**	Report concentration of sample with a “U”
		≥ 2x the CRQL**	No qualification required
	> CRQL *	< CRQL *	Report CRQL value with a U
		≥ CRQL* and ≤ blank concentration	Report blank value for sample concentration with a U
		≥ CRQL* and > blank concentration	No qualification required
	= CRQL*	≤ CRQL *	Report CRQL value with a U
		> CRQL *	No qualification required
	Gross contamination **	Detects	Report blank value for sample concentration with a U

\* 2x the CRQL for methylene chloride, 2-butanone and acetone.

\*\* 4x the CRQL for methylene chloride, 2-butanone, and acetone.

\*\*\* Qualifications based on instrument blank results affect only the sample analyzed immediately after the sample that has target compounds that exceed the calibration range or non-target compounds that exceed 100 µg/L.

DATE ANALYZED	LAB ID	LEVEL/MATRIX	COMPOUND	CONCENTRATION UNITS
_All_method_blank_meet_method_specific_criteria._____				
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

**Note:** Concentration detected below the reporting limit, results qualified following the table above.

Field/Equipment/Trip blank

DATE ANALYZED	LAB ID	LEVEL/MATRIX	COMPOUND	CONCENTRATION UNITS
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\_\_\_\_\_  
 \_No\_field/trip/equipment\_blanks\_analyzed\_with\_this\_data\_package.\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Field/trip blank actions

Field or Trip blank when available should be assessed for possible contaminants in the canister used for trip blank. This canister and its analytical results are specific to the trip blank sample **only**. If contaminants are present in the canister used for trip blank, its suitability for use as trip blank can be assessed using the following criteria.

**Table 8. Field/Trip Blank suitability based on Canister contamination**

Clean canister Result	Field/Trip Blank Result	Action for Field/Trip Blank
Detects	Not detected	No qualification, no action for samples is required
Detects	< clean canister result or $\geq$ clean canister result but < 2X the clean canister result	Report as non-detect "U", invalid as trip blank, no action for samples is required.
	$\geq 2x$ the clean canister result	No qualification, valid trip blank for sample actions.

CONTAMINATION SOURCE/LEVEL	COMPOUND	CONC/UNITS	AL/UNITS	SQL	AFFECTED SAMPLES

All criteria were met   X    
 Criteria were not met  
 and/or see below         

## SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery.

Matrix: solid/aqueous

SAMPLE ID	SURROGATE COMPOUND			ACTION
	1,2-DICHLOROETHANE-d4	Toluene-d8	4-BFB	

  Surrogate recoveries within laboratory control limits  

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

QC Limits\* (Air)

      LL to UL      70 to 130                  70 to 130      70 to 130      

- \* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- \* If QC limits are not available, use limits of 80 – 120 % for aqueous and 70 – 130 % for solid samples.

Actions:

QUALITY	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	UJ	Accept

Surrogate action should be applied:

If one or more surrogate in the VOC fraction is out of specification, but has a recovery of > 10%.

If any one surrogate in a fraction shows < 10 % recovery.

All criteria were met   X    
 Criteria were not met  
 and/or see below       

## VIII. LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices. LCS concentration should be in the middle of the calibration range and under the same sample conditions.

### 1. LCS Recoveries Criteria

**Table 9. LCS/LCSD Actions for TO-15 Analyses**

Criteria	Action	
	Detected Associated Compounds	Non-detected Associated Compounds
Percent recovery Criteria		
%R > Upper Acceptance Limit (>130%)	J	No qualification
%R in the acceptable range, 70-130%	No qualification	
%R < Lower Acceptance Limit (< 70 %)	J	UJ
%R < 50%	J	R
Lower Acceptance Limit ≤ %R ≤ Upper Acceptance Limit	No qualification	
Relative Percent Difference Criteria		
% RPD ≤ 25%	No qualification	
% RPD > 25 %	J	UJ

LCS ID                      COMPOUND                      % R                      QC LIMIT

  LCS/LCSD (Blank spike) analyzed in this data package. % recoveries and RPD  
  within laboratory control limits.

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### Note:

### 2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? **Yes** or No.

If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

All criteria were met ☒ X  
 Criteria were not met  
 and/or see below \_\_\_\_\_

# IX. FIELD/LABORATORY DUPLICATE PRECISION

Sample IDs: 1701477C-06A/1701477C-07A  
 Sample IDs: 1701477C-09A/1701477C-10A  
 Sample IDs: 1701477C-12A/1701477C-13A  
 Sample IDs: 1701477C-16A/1701477C-17A

Matrix: Air  
 Matrix: Air  
 Matrix: Air  
 Matrix: Air

Field duplicate samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information. In the absence of QAPP guidance for validated data from field duplicates, the following action will be taken.

Identify which samples within the data package are field duplicates. Estimate the relative percent difference (RPD) between the values for each compound. Note large RPDs (>50 %) in the narrative. Use professional judgment to qualify data when RPD > 50 %.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
1701477C-09A/1701477C-10A					
Methanol	160	310	220	34 %	No action, concentration < 5 SQL and RPD within method performance criteria.
Laboratory/field duplicate analyzed with this data package. RPD within laboratory and method performance criteria for target analytes except for the cases described in this document. Methanol RPD outside the laboratory control limit but within the method performance criteria, no action taken.					

Other suggested actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.



All criteria were met   X    
 Criteria were not met  
 and/or see below       

## X. INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area of samples which do not meet the criteria.

- \* Area of +40% or -40% of the IS area in the associated calibration standard (CCV standard or mid-point from initial calibration).
- \* Retention time (RT) within  $\pm 20$  seconds of the IS area in the associated calibration standard.

**Table 10. Internal Standard Actions for TO-15 Analyses**

Criteria	Action	
	Detected Associated Compounds*	Non-detected Associated Compounds*
Area counts > 140% of CCV or mid-point standard from initial calibration)	J-	No qualification
Area counts < 60% of CCV or mid-point standard from initial calibration)	J+	R
Area counts $\geq 60\%$ but $\leq 140\%$ of CCV or mid-point standard from initial calibration)	No qualification	
RT difference > 20.0 seconds between samples CCV or mid-point standard from initial calibration)	R*	
RT difference < 20.0 seconds between samples and CCV or mid-point standard from initial calibration)	No qualification	

\* Examine the chromatographic profile for that sample to determine if any false positives or negatives exist. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for that sample fraction. Detects should not need to be qualified as unusable (R) if the mass spectral criteria are met.

DATE	SAMPLE ID	IS OUT	IS AREA	ACCEPTABLE RANGE	ACTION
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Internal standard area and retention times within laboratory control limits for both samples and calibration standards

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All criteria were met ☒X\_\_\_\_  
Criteria were not met  
and/or see below \_\_\_\_\_

## XII. SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

1701477C-02A

Methanol                      RF = 2.76251

$$[ ] = (148261)(400)/(145549)(2.76251)$$

$$= 147.5 \text{ ppbv OK}$$

All criteria were met   X    
 Criteria were not met  
 and/or see below       

## XII. QUANTITATION LIMITS

### A. Dilution performed

SAMPLE ID	DILUTION FACTOR	REASONS FOR DILUTION
Samples diluted by a factor of 2.82 or less except for the followings.		

### System Performance

#### **Action:**

Use professional judgment to qualify the data if it is determined that system performance has degraded during sample analyses. Note, for Laboratory Project Officer (PO) action, any degradation of system performance which significantly affected the data.

#### **Note:**

### **Overall Assessment of Data**

**Action:**

1. Use professional judgment to determine if there is any need to qualify data which were not qualified based on the Quality Control (QC) criteria previously discussed.
2. Write a brief narrative to give the user an indication of the analytical limitations of the data. Note, for Laboratory Project Officer (PO) action, any inconsistency of the data with the Sample Delivery Group (SDG) Narrative. If sufficient information on the intended use and required quality of the data is available, the reviewer should include their assessment of the usability of the data within the given context. This may be used as part of a formal Data Quality Assessment (DQA).

**Overall assessment of the data:** Results are valid; the data can be used for decision making purposes.